STUDIES IN REGIONAL GEOGRAPHY — No. 1
"THE GREAT PLAINS"

THE SOD HOUSE

As a Form of Shelter

Where? What? Why?

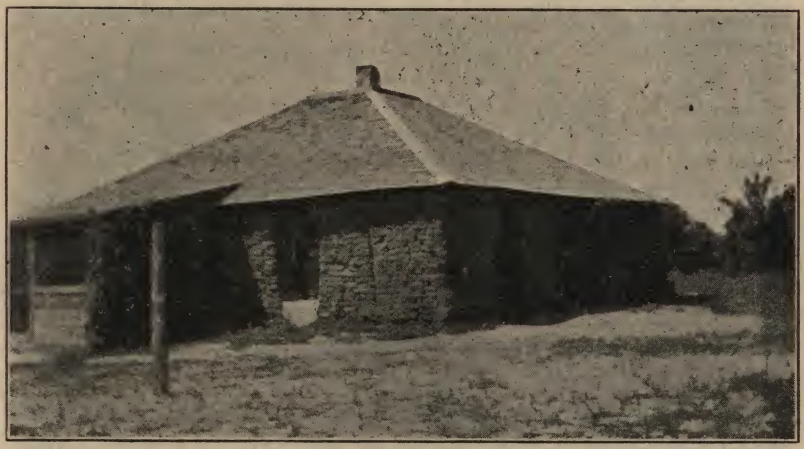
By LOUISE W. MEARS A. M.
Dept. of Geography
Milwaukee State Normal School

(Reprinted from THE JOURNAL OF GEOGRAPHY June, 1916, vol. XIV, pp. 385-389)

THE SOD HOUSE AS A FORM OF SHELTER; WHERE? WHAT? WHY?*

By Louise W. Mears
Dept. of Geography, Milwaukee State Normal School

AS a form of shelter in the Great Plains, playing a part in the history of the development of the United States and representing a real response to nature, the sod house merits our study. The little "soddy," so undervalued by the uninitiated and so little known, is but a passing curiosity to the car-window observer who hurries across the monotonous Great Plains east of the contrasting rugged Rockies. Even less attractive may be the abandoned "soddy" standing in pathetic dejection near the railroad. Practically nothing of an informational nature has been written about the sod house, hundreds of which still exist to shelter families and school children in the United States and Canada.



A SOD HOUSE IN NEBRASKA

A Response to Environment

The sod house, like the Eskimo igloo, is an immediate response to nature, telling a large geographical story. It differs from the igloo or the Bushman's straw hut in being a transitory form of shelter. It is overtaken by the modern frame house in much the same ratio that ranching is supplanted by agriculture. As an index to an important group of geographical conditions, it surpasses the log house and

the dugout, which are found everywhere from the sub-arctic to the gulf, suggesting frontier conditions only, or an elementary standard of living, as with the negroes of the south. The facts will no doubt bear out the statement that the sod house, as a form of dwelling used by white men in the United States, is our most perfect type of primitive shelter which illustrates man's adaption to nature. This comparison does not include the Indian adobe house.

The geographical story suggested by the sod house may be resolved into the following problems:

1. Where are sod houses in use today? 2. Why? 3. How constructed? 4. What modifications appear in the original structure, and what do these changes indicate? 5. What change in related conditions has brought about a decrease in sod houses?

The Region of the Sod House

1. *Where?* It is in the Great Plains region of the United States chiefly that we find this interesting form of shelter, the sod house, constructed with such variations and modifications as the ingenious homesteader and the rancher can devise. By Great Plains we mean the western part of what people generally term the prairies, corresponding to those grass lands known in Asia as steppes, where treelessness is also due to "great extremes of climate, produced by remoteness from the ocean." As Herbertson tells us in *Man and His Work*, "The Russian word steppes denotes unwooded tracts in middle latitudes, of considerable extent, and covered with useful vegetation. The victory (here) belongs to the grasses, which grow with incredible rapidity."

As to the line of demarcation between prairies and plains, Brigham gives the widely accepted view: "The hundredth meridian runs through the Dakotas, central Nebraska and western Kansas. It is not the exact climatic boundary, but it is nearest to it, and it is easy to remember that eastward more than twenty inches of rain falls in a year, crops are raised without artificial watering, and we call the land prairies. West of the line there is no sudden change either of climate or topography, but on the average the rainfall is less than twenty inches, and irrigation is needed, except in unusual seasons, or for crops that require but little water. When we cross the hundredth meridian going west, we begin to be three thousand feet or more above the sea. We have crossed a plateau which has a gentle slant to the east. There is a central belt of the Great Plains which is smoother than

the rest. It runs through Nebraska and Kansas and into Texas, and has been distinguished as the High Plains. In this central area there is rain enough to allow the forming of a sod, which is firm enough to check erosion by rain and by small streams."

Nebraska is an unusually good state in which to observe the relation of the sod house to topography and climate. Here, because the regions of the High Plains, Sand Hills and Prairies overlap, we must not confine the area of the sod house too closely to the western sections of the plains states. For example, in central Nebraska, in the Sand Hills region, sod house dwellings and school houses are not uncommon. We have the statement on good authority that in one of these counties alone there are at present from seventy-five to one hundred sod houses. This statement has greater significance when we bear in mind the sparsity of population.

The Sand Hills region of Nebraska is, paradoxically speaking, a wet-dry country. The sandy surface is dry, and struggling streams are few, but just beneath the surface there is an abundance of ground water. The location of the ranchman's home can here be permanent. Neither is he compelled to erect windmills as in the sections where the water table is low. Condra, in his *Geography of Nebraska,* says: "There is little surface water in the Sand Hills region. For miles in the hills proper no stream-channels are seen. The streams are abundantly supplied by spring water, but with little or no storm water. The open-textured, sandy soil absorbs most of the rainfall. Though the amount of moisture evaporated from the soil is large, there is not as much loss in that way as some have thought, a surface mulch of sand preventing excess evaporation. Much of the rainfall percolates downward through the sand and becomes ground water. The water table is nearest the surface at a distance from the river valleys, rising and falling with the wet and dry years. The amount of ground water in the region is great, more than would be expected with the rainfall. Capillary water is present in the sand a few inches below the surface, extending from this point to the water table below. Lakes are common, and wet weather ponds are more common than permanent lakes."

The "Why" of the Sod House

2. *Why* should houses be made of sod? It is often the only available building material. The treeless plains are the grass lands for the extensive cattle ranches. The house is

likely to be built a long distance from towns or railroads. To turn the firm, deep sod with a plow is quick work. The sod house involves practically no expense. In fact, the expense can be reduced to the cost of window-glass. It is easily constructed, and resists both heat and cold. It is stable and durable. The scant rainfall and rapid evaporation leaves the building intact. But few persons would on first thought associate stability and durability with a sod house.

3. *How* is a sod house constructed? Nature furnishes the material at first hand. She also deals kindly with man's handiwork. The house is put together most simply. Sometimes, as in the case of a school house, all the neighborhood families gather and build it in one day. No framework need be erected before the sod is laid. Any tough sod convenient to the building is used, such as blue-stem grass or hay meadow grass cut from a moist, compact land, a mile or less away. Autumn is the preferred time, when the roots are tougher and thicker. A dry time is best for laying the sod, as the building settles less.

The sod is cut in blocks two feet or more in length, a foot or more wide and two to four inches thick. It is laid block upon block like brick, with the grass side down. The length of the block determines the thickness of the wall. It can easily be seen that window and door casings will be wide when set in a wall that is several feet thick. The frames for these are of lumber, and are in place when the walls are being built up.

The roof of the early sod house was of sod, where now shingles are often used. It is able to withstand the showers. From the "draws" or "canyons" the homesteader secures the long pine and the saplings. We are reminded that the local details of surface vary in the western plains. The steep-walled ravines are often known as canyons. In the billowy Sand Hills region there are the "pockets" and basins and the barren "blowouts." In western North Dakota the deep valleys, which often furnish protection to animals from the storms of winter, are sometimes known as coulees. As Ellen Churchill Semple says, "The more flat and featureless a lowland is, the more important become even the slightest surface irregularities. In the dead level of extensive plains even slight elevations are seized upon for special uses, or acquire peculiar significance."

The first settlers had reason to prize highly such timber as they could procure along the streams and in little depres-

sions where water had stood. The ridge-pole for the roof of the "soddy" is usually the long pine. Along the middle of each side of the roof a second long pole extends parallel to the ridge-pole. Rough slabs are laid across the poles. These may be covered with tar paper or straw before the sod is laid for the roof, grass side down. The sod may be laid double, the second layer covering the openings in the first. The pitch, or slant, of the roof is slight. And invariably the stove pipe extends through the roof. The American homesteader seems not to have made a success of roof thatching.

The Interior

Questions and grave misgivings arise in the mind of the reader as to the interior of the sod house. It is here that the ranchman shows his superior civilization. In speaking of the American grass lands, Herbertson says: "The steppes of North America have been occupied, chiefly in the last half century, by settlers of North European descent, who have established large cattle-ranches. These have not reverted to pastoral habits in returning to pastoral life. This is partly because they came of a race which had acquired different characteristics during centuries of settled life, and partly because the construction of railways has opened markets and removed the isolation of steppe life, where nothing could be procured from outside sources, and each group had to supply its needs from the materials at its command."

There is frequently the strange anomaly of the sod house with its interior furnishings including a library, piano, rugs and pictures. The owner of the house may be a college-bred man or the father of children who are attending the university. The walls are trimmed smooth inside with a sharp spade, and plastered with a native clay, "giving a smooth, tan colored wall as easy to keep free from vermin as a frame building would be." Often walls are kalsomined, papered or whitewashed. A thin muslin is usually tacked over the ceiling, and is easily taken down to be washed when necessary. Pegs are driven into the walls for hat and coat racks and supports for shelves, without which a sod house would not be complete. The house varies in size, containing as many rooms as are desired, a covered passage often joining two buildings. The floors, usually excavated several feet, are of earth.

Permanency

A well-built sod house may be occupied for ten, twenty or thirty years, with the sod roof renewed occasionally. Cool in summer and warm in winter, it furnishes secure shelter when the winds howl over the plains bearing the blinding blizzard or the grating sand. Flowers bloom in the deep window recesses the year around. Today many a family lives in the sod house as a matter of preference. In modified form, it is likely to remain in use for some time to come in the western counties of the Great Plains, where timber is scarce and transportation poor and towns are far apart. Dry farming and irrigation cannot encroach greatly upon the ranching country.

The spirit of independence that characterizes a people engaged in pastoral pursuits is strongly developed on the Great Plains. The view from each settler's home is boundless. This is the country over which Kit Carson and Buffalo Bill rode in many a wild ride. Here is where Theodore Roosevelt lived a cowboy's life. Wholesome hospitality the traveler on the treeless plains may count upon. Near neighbors, ten or more miles apart, enjoy social gatherings. Railroads and automobiles are, however, rapidly removing the conditions that attend isolation, and the ranchman enjoys large opportunities.

Homestead Laws

Growing out of the necessity for extensive ranching grounds in the semi-arid portion of Nebraska, that is in the Sand Hills and High Plains, congress passed a homestead law known as the Kinkaid Act, in 1904. The experiment of trying to convert this region into farms had failed generally. The Kinkaid Act allowed the homesteader to make an entry for 640 acres of land, instead of 160 acres, as formerly. Thus the homesteader makes up in quantity of land for what the soil lacks in quality and productiveness. He must depend almost entirely upon grazing and stock raising. "The use of wind-mills may enable him to grow a garden and perhaps a few acres of field products on his claim, but mainly his dependence must be upon utilizing the natural sparse growth of grass." Such lands are excluded from homesteading as may be reasonably practicable for irrigation by means of water conducted from natural streams, under the national irrigation law, or by private enterprise, particularly along the North Platte River. The old 160-acre homestead, as originally planned, had serious natural drawbacks on the

Great Plains. These were the semi-arid conditions; the impossibility of reclaiming by irrigation on account of lack of water supply; the great elevation, ranging from 2000 feet at the eastern limit to 5000 feet or more at the western limit of the area, and being far above the level of streams.

In conclusion, we may say of the sod house:

(1) It may be a home in every sense of the word; not a hovel or a sign of poverty.

(2) It is the expression of a natural response to a physiographic region.

(3) The study of it as such furnishes a concrete approach to the physical geography of the region.

Bibliography

Geographic Influences in American History. Brigham. Ginn and Co., Boston.

Man and His Work. Herbertson. Adam and Charles Black, London.

Geography of Nebraska. Condra. University Pub. Co., Lincoln, Nebraska.

Influences of Geographic Environment. Semple. Henry Holt & Co., N. Y.

The Story of the Prairies. Willard. Rand McNally & Co., Chicago.

How the World is Housed. Carpenter. American Book Co., New York.

How We Are Sheltered. Chamberlain. The Macmillan Co., New York.

Congressional Record. Kinkaid Act.

Personal Experiences of Genevieve Richmond, County Superintendent of Kieth Co., Nebraska.

Personal Experiences of Carrol G. Pearse, President Milwaukee State Normal School.

The Story of Nebraska. Louise W. Mears. F. A. Owen Publishing Co., Danville, N. Y.

Human Geography. J. Russell Smith. Pg. 60. John C. Winston Co.


Scale of Miles
0 100 200 300 400 500 600 700 800
Comparative Area
400 Miles
300 Miles
Pennsylvania
10,000
Square Miles
The Whole Rectangle Contains
160,000 Sq. Miles
15,000'
10,000'
5,000'
Sea level
1,000'
57
31
31
31
58
mountains
Plateau
Plains

Rivers that cross Great Plains

1. Mississippi River.
2. Red River.
3. Arkansas River
4. Platte River.
5. Missouri River.
6. Saskatchewan River.
7. Churchill River.
8. Kansas River
9. Canadian River.
10. Peace River
11. Mackenzie River.
12. Athabasca River.
13. Yellowstone River.
14. Nelson River.
15. Liard River
16. Brazos River.
17. Trinity River
18. Sabine River

A—

Cities of Great Plains

1. Austin
2. Fort Worth
3. Oklahoma city
4. St. Louis
5. Kansas city
6. Omaha
7. Dallas
8. Guthrie
9. Minneapolis
10. Winnipeg
11. Regina
12. San Antonio
13. Austin
14. Baton Rouge
15. Hot Springs
16. Little Rock
17. Joplin.
18. Wichita.
19. Topeka.
20. Jefferson City
21. St. Joseph.
22. Lincoln.
23. Des Moines.
24. Pierre
25. Bismarck.
26 Denver
27. Colorado Springs.
28. Pueblo

Leading Industries of Great Plains.

1. Mining
2. Farming by irrigation
3. Cotton
4. Grazing. (cattle)
5. Wheat
6. Stock raising

Dry Farming

One of the new ways is to plow a field and let it lie bare for a year, so that there are no plants in it to use the moisture. The next year a crop is sown. It ripens the rain of that year, and uses also some of the rainwater remaining in the ground from the year before. By this "summer fallowing" one of the methods of "dry farming"; some grain is now grown in parts of the Great Plains, and in many other regions of little rain.

Some of the Indians of New Mexico have shown how dry farming may fit dry lands. They grow a variety of bean that has lived in the dry country so long that it has learned to wait for rain. It will blossom, bear a few beans, stand throughout a few weeks of drought, grow again after the next shower, ripen more beans, and wait through a further drought for a third period of production.

Within the last few years, "dry farming" has replaced the grazing industry in many places.

"Dry-farming" especially with hardy, drought resisting plants promises much more than irrigation for the region as a whole. "Dry-farming" seeks

(a) to get the largest possible proportion of the rainfall to enter the ground,

(b) to reduce to a minimum the loss of water by evaporation from the soil.